

## **SUPPLY CHAIN VISIBILITY AND COMPETITIVE ADVANTAGE OF COMPANIES: A COMPREHENSIVE LITERATURE REVIEW**

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### **Abstract**

Supply chain visibility (SCV) is essential to sustained competitive edge, particularly for firms operating within highly complex and constantly changing contexts. This study explored the concept of SCV and relevant to enhanced competitive advantage in terms of service quality and customer satisfaction. The study draw on extensive literature review to assess how SCV contribute to competitive advantage of firms. Resource based view constituted the theoretical framework of the study. The literature review reveals that robust SCV significantly bolster service quality and customer satisfaction; given that firms are willing to address the challenges of high implementation cost and technological complexities that beset SCV. Thus, the study concludes that SCV enhance competitive advantage of firms by contributing to better performance management, effective resource utilization, and a stronger market position; and recommends that firms, especially those operating in dynamic and competitive markets should invest in advanced technologies and infrastructure that enhance SCV capabilities.

**Keywords:** Competitive advantage, customer satisfaction, service quality, supply chain visibility

### **Introduction**

Supply chain visibility (SCV) is increasingly becoming pivotal competitive advantage, particularly in industries where service quality and customer satisfaction are paramount. SCV play critical roles in ensuring that service delivery meet or exceed customer expectations, theus, enhance customer satisfaction and secure a competitive edge (Nwokah, 2009).

The complexity of supply chains, combined with the high stakes involved in service quality, necessitates a level of transparency that enable real-time monitoring, tracking and management of supply chain activities (Kazancoglu et al., 2020). SCV not only reduce risks and operational inefficiencies but also facilitate delivery of high-quality service that directly contribute to customer satisfaction and loyalty (Dabhilkar et al., 2021).

The relevance of SCV to competitive advantage is underpinned by institutional theory, which posits that organizations conform to institutional norms and expectations to gain legitimacy, resources and competitive positioning (Meyer & Rowan, 1977). In industries where regulatory compliance and stakeholder expectations are significant, SCV serves as a mechanism for aligning service quality with institutional demands, thereby enhancing customer satisfaction and competitive advantage (Ekanem, 2022).

Hence, SCV is not only crucial to meeting regulatory requirements, but to fostering trust and credibility, which are critical components of service quality (Scott, 2014). Empirical evidence supports the notion that SCV contributes significantly to service quality and customer satisfaction, and ultimately, competitive advantage (Zhu et al., 2021).

The ability to maintain SCV is particularly essential due to the intensity of competitive and regulatory requirement of today's operating environment; and in view of the need to deliver quality service and customer satisfaction to boost market share and profitability (Ogbo et al., 2023). The role of SCV in driving competitive advantage is further amplified by advances in technology that enhance transparency, traceability and responsiveness across the supply chain (Choi, Zhang, & Cheng, 2022).

These technologies (such as IoT) enable companies to monitor service quality in real-time, address potential issues before they impact customer satisfaction, and provide customers with greater visibility of service processes, thereby improving overall service experience (Kache & Seuring, 2020). As these innovations become more widely adopted, SCV is expected to play an even more crucial role in shaping the competitive landscape of companies.

By aligning SCV with institutional imperatives and leveraging advanced technologies, companies can better meet customer expectations, enhance service delivery, and secure a competitive edge in a dynamic and challenging market environment. This study explored the relationship between SCV and competitive advantage by assessing reports and arguments in literature.

### **Theoretical Framework**

This study is premised on Resource-Based View (RBV) (Barney, 1991). RBV provides a framework for understanding how firms achieve and sustain competitive advantage by leveraging internal resources. The theory posits that firms with valuable, rare, inimitable, and non-substitutable (VRIN) resources will achieve sustained competitive advantage.

This perspective marks a significant shift from traditional theories that focused on external market conditions as primary determinants of competitive advantage, emphasizing instead the unique internal characteristics of the firm. RBV is built on earlier contributions Penrose (1959), who argue the growth and competitive advantage can be attributed to productive use of internal resources (Penrose, 1959).

RBV is thus highly relevant to understanding the relationship between SCV and competitive advantage. Companies operate in a highly volatile environment where external factors, such as changing market conditions, are significant. RBV underscores the need for firms to invest in robust SCV systems to differentiate themselves in service delivery, customer satisfaction, operational efficiency, all of which, leads to sustained competitive advantage.

RBV is crucial to firms operating in competitive industries, as it provides a framework for justifying investments in SCV as a means of leveraging internal strengths to navigate external challenges. Thus, RBV provides a compelling justification for the importance of SCV to achieving competitive advantage.

### **Concept of Supply Chain Visibility**

SCV is the capability of a company to track its products in real-time across the entire supply chain, from raw material sourcing to delivery of finished products (Kache & Seuring, 2020). It is the use of digital technologies to provide end-to-end transparency across the supply chain, enabling better decision-making and risk management (Kazancoglu et al., 2020). SCV is also the extent to which supply chain partners share relevant, accurate and timely information to improve collective supply chain performance (Dabhilkar et al., 2021).

A broader definition considers SCV as a strategic approach to supply chain management that enhances visibility of supply chain processes, leading to improved efficiency, customer satisfaction and competitive advantage (Zhu et al., 2021). SCV offers significant opportunities for firms willing to invest in its implementation. It has the potential to confer competitive advantage by enhancing operational efficiency, improving service quality, and placing the firm in a stronger competitive position (Ogbo et al., 2023).

Also, SCV enable firms navigate complex regulatory landscapes by providing the transparency needed to demonstrate compliance with standards and regulations (Ekanem, 2022). Golicic et al. (2020) adds that SCV enhance supply chain efficiency by reducing lead time, minimizing inventory levels, and improving order accuracy. Further, SCV offers a means of differentiation by delivering superior customer experience and fostering long-term relationships. Thus, SCV is not just a tool for operational efficiency but a strategic asset that can drive competitive advantage.

However, the implementation of SCV is not without challenges. One significant challenge is the high cost of integrating advanced technologies, such as blockchain and IoT, into existing supply chain systems (Kache & Seuring, 2020). These technologies require substantial investment in infrastructure, training and maintenance. Additionally, the complexity of global supply chains makes it difficult to achieve complete visibility, as data must be collected and synchronized from multiple sources across different geographies (Ekanem, 2022). Privacy and data security concerns also pose challenges, as the sharing of sensitive information across the supply chain increases the risk of data breaches and cyber-attacks (Zhu et al., 2021).

### **Concept of Competitive Advantage**

Competitive advantage is a fundamental concept in strategic management, representing the unique position a company holds within its industry, and which allows it to outperform rivals. This advantage arises from a firm's ability to create value that rivals cannot replicate or surpass (Nwokah, 2009). Porter (2020) view competitive advantage as the ability of a firm to deliver products that are perceived by customers as superior to those of competitors, thereby allowing the firm to generate higher profits.

In the view of Barney (2021), competitive advantage is the possession and effective utilization of valuable, rare, inimitable, and non-substitutable resources that enable a firm to achieve superior performance; while to Grant (2021), competitive advantage is “a firm’s capacity to implement strategies that competitors find difficult to replicate, leading to sustained above-average returns. In rather more customer-centric perspective, Kumar and Pansari (2021) defines it as “the degree to which a firm meets or exceeds customer expectations, resulting in greater customer loyalty and market share.”

The foregoing definitions suggests that competitive advantage is not a static attribute, but a dynamic process that require continuous adaptation and innovation. Porter’s (2020) framework of cost leadership and differentiation remains one of the most influential models for understanding how firms achieve competitive advantage. Cost leadership involves becoming the lowest-cost producer in an industry; thus, allow the firm to offer lower prices than competitors, while differentiation focuses on creating products that are perceived as unique, and capable of commanding premium prices.

Definitions of competitive advantage reflect its multifaceted nature. Ogbo et al., 2023) identify service quality, customer satisfaction, customer loyalty, market share and strong market position as key measures of competitive advantage. In this paper however, service quality and customer satisfaction are adopted to represent competitive advantage.

### **Service quality**

Service quality is the overall assessment of a service by the customer, where the customer’s expectations are compared to the actual performance of the service provider” (Zeithaml et al., 2021). It is customers’ perception of their interaction with a service provider, encompassing aspects such as reliability, responsiveness, and empathy (Parasuraman et al., 2020). Service

quality may also be seen as the degree to which service delivery outcomes satisfy customers' needs and preferences (Grönroos, 2021).

Service quality is a prominent way companies that seek increased profits through new customer acquisition and retention of current ones attain their aim (Ateke & Amangala, 2021). Ghotbabadi et al. (2015) posit that service quality is essential to attracting, keeping, and expanding customers, as well as motivating and eliciting purchase intention.

Thus, service quality is a critical determinant of success, especially in competitive markets. In contexts, where customer satisfaction and operational efficiency are paramount, service quality is vital to establishing and maintaining competitive advantage. Therefore, service quality is not only a measure of competitive advantage. It is also a strategic tool for gaining competitive advantage. In sectors where supply chain complexities and customer expectations are particularly high, companies that prioritize service quality and leverage SCV achieve superior performance. While the challenges of delivering consistent service quality are substantial, the opportunities for differentiation and market leadership make it an essential focus for companies seeking to attain competitive edge.

The SERVQUAL model (Parasuraman et al., 1986), which identify five dimensions of service quality: tangibles, reliability, responsiveness, assurance, and empathy has been widely used to assess service quality across various industries. However, the model also face criticism for its reliance on a gap model that assumes customer satisfaction results solely from closing the gap between expectations and perceptions (Wali & Opara, 2013; Harcourt & Adiele, 2020). Scholars argue that this approach oversimplifies the complexities of service quality by not considering factors such as customer involvement and co-production (Gladson-Nwokah et al., Jaja 2024).

### **Customer satisfaction**

Customer satisfaction is a crucial metric that reflects the degree to which a company meets or exceeds customers' expectation. It is a vital component of business success, particularly in industries where competition is intense, and customer loyalty is hard to secure (Ateke & Kalu, 2016). In complex and dynamic market where customers' expectation continually evolve, customer satisfaction serves as a key indicator of a company's ability to maintain and enhance its competitive position.

Anderson and Mittal (2021) describe customer satisfaction as "customer's perception of the degree to which a product meet their expectations". Oliver (2020) emphasize the emotional response of customers, by defining customer satisfaction as a psychological state that reflects feelings of contentment or disappointment resulting from comparing a product's perceived performance with expectations.

Therefore, customer satisfaction can be seen as the outcome of a cognitive and affective evaluation, where comparison is done actual product performance and expectations (Giese & Cote, 2020). It is a composite of customer experiences with a company's products, customer interactions, and overall perception of a company's value proposition (Homburg et al., 2021).

Amangala and Ateke (2018) conceive customer satisfaction as customers' assessment of the value they receive from the purchase and consumption of products. This means that customer satisfaction is influenced by ideal, expected and promised standards, as well as perceived value of competitor's offerings (Agarwal et al., 2007). Customer satisfaction has been, and is still a major goal of companies because it enhances customer retention, loyalty and improves firms' market share (Amangala & Ateke, 2018; Martey, 2015).

Customer satisfaction is a measure of success and a strategic imperative for competitive advantage. Satisfied customers are more likely to exhibit loyalty, engage in repeat business, and act as brand advocates, which can significantly enhance a company's market position. The concept of customer satisfaction is deeply rooted in marketing theory and practice, particularly in the context of relationship marketing, where the focus is on creating long-term value for customers (Kotler & Keller, 2021).

However, achieving customer satisfaction is not without challenges. The dynamic nature of customer expectations, influenced by factors such as technological advancements, increased access to information, and global competition, makes it difficult for companies to consistently meet or exceed these expectations (Homburg et al., 2021).

### **Supply Chain Visibility and Competitive Advantage**

Studies on supply chain effectiveness has gained significant momentum in recent years. These studies provide valuable insights into supply chain dynamics and emphasize advances in technology digital transformations, and collaborative practices. These studies also hint on the application of technologies that enhance SCV to boost competitive advantage.

Rogerson and Parry (2020) examined the role of blockchain technology in enhancing SCV. Their qualitative analysis, based on semi-structured interviews, revealed that blockchain could significantly improve visibility and trust in supply chains. Despite its potential, the study identified trust in technology, human error, and governance issues as challenges to implementation of SCV.

Ahmed et al. (2021) conducted a comprehensive literature review on the use of the IoT for enhancing SCV. The study synthesized existing research on IoT applications within supply chains and identify key technologies, benefits, and challenges associated with SCV. Their structured review revealed that IoT technologies significantly contribute to SCV. The study highlight the concept of Supply 4.0, integrating Industry 4.0 elements within the supply chain context, and proposed an empirical research agenda to address the identified gaps.

Saqib and Zhang (2021) examined the moderating role of SCV on the impact of sustainable practices on performance of Pakistani manufacturing firms. The research demonstrated that SCV significantly moderates the impact of sustainable practices on performance. The study highlight the importance of SCV in enhancing the effectiveness of sustainability efforts and underscores the need for information sharing and coordination in achieving sustainable outcomes.

Malik et al. (2021) offered a resource orchestration view on supply chain traceability and transparency. They conceptualized and validated these constructs as interrelated capabilities that mutually enhance competitive advantage. Using fuzzy set qualitative comparative analysis, they revealed that creating transparency perceptions among stakeholders is crucial to leveraging traceability for high financial performance.

Gani et al. (2021) investigated the relationship between corporate transparency, competitive advantage and performance in the Muscat Securities Market. The study, which analyzed secondary data from various sectors, confirmed that higher transparency correlates with improved performance and competitive advantage. The results highlight the significance of corporate transparency in enhancing financial performance.

Baah et al. (2022) focused on the influence of supply chain collaboration on SCV, stakeholder trust, and performance outcomes in manufacturing firms. Utilizing a quantitative approach and

partial least square structural equation modeling, they found that supply chain collaboration positively impacts SCV, stakeholder trust, and both environmental and financial performances. These findings underscore the competitive advantages of collaborative supply chain practices, particularly in emerging economies, and provide valuable insights into the broader scope of supply chain collaboration.

Pan et al. (2022) investigated the effect of Internet convergence on competitive advantage in Chinese manufacturing enterprises. Their study, based on patent data from listed firms, revealed that while technology and market convergence enhance competitive advantage through product differentiation, business convergence tends to weaken it. The study highlights the need for strategic alignment in internet convergence efforts to avoid negative impacts on cost control and competitive positioning.

Alabdali and Salam (2022) explored the impact of digital transformation on competitive advantage. Utilizing a survey of supply chain professionals and partial least squares structural equation modeling, they found that digital transformation positively affects competitive advantage. The study suggests that digital transformation could be the game-changer in competitive markets.

Huang et al. (2023) examined the interplay between supply chain capabilities, visibility, resilience, and performance in Vietnamese garment manufacturing firms. The research indicated that while visibility significantly influences resilience, the direct impact of visibility and resilience on performance were not supported. The study offers practical implications for improving supply chain performance by enhancing capabilities and visibility.

Yu et al. (2024) explored how bundling knowledge resources and digital resources, such as big data-powered artificial intelligence (BDAI), enhance SCV capabilities for implementing just-in-case (JIC) practices. The study, which utilized survey data from Chinese manufacturers, demonstrated that knowledge integration mechanisms and BDAI positively impact SCV; and that SCV mediates the relationship between knowledge integration and JIC practices, as well as fully mediates the BDAI and JIC relationship.

The foregoing reports imply that SCV impacts competitive advantage of firms by giving firms the ability to track and monitor supply chain activities in real-time, and providing insights into movement of goods, information, and finances (Huang et al., 2023). Particularly, the reports show that SCV is pivotal to competitive advantage in sectors that face complex supply chains (Yu et al., 2024; Saqib & Zhang, 2021). This is possible because SCV works by leveraging advances in technology to provide real-time tracking, data transparency and improved stakeholder trust (Rogerson & Parry, 2020; Ahmed et al., 2021).

Today's firms face unique challenges, including regulatory complexities, geopolitical risks, and infrastructure constraints (Gani et al., 2021). To mitigate these challenges, SCV provides greater transparency and responsiveness; and enables improved coordination, risk management, and operational performance that strengthens competitive position (Baah et al., 2022). Further, SCV confers stronger competitive position by utilizing digital transformation to enhance procurement efficiency and overall competitive positioning (Alabdali & Salam, 2022), resilience and operational performance of firms (Huang et al., 2023; Pan et al., 2022); stakeholder engagement and continuous improvement (Malik et al., 2021), as well as supply chain performance and operational efficiency.

### Conclusion and Recommendations

This paper focused on exploring the concept of SCV and its relevance to competitive advantage of firms. The extensive literature review undertaken revealed that SCV is crucial to enhanced operational and strategic performance, as it enable companies to gain real-time insights into supply chain processes, identify inefficiencies, mitigate risks, and improve overall supply chain management. The enhanced transparency resulting from SCV allow companies to respond swiftly to change in market conditions, and achieve competitive edge.

The review also showed that companies with high levels of SCV better manage their resources, optimize their operations, and enhance their customer service. This improved efficiency and responsiveness contribute to stronger market positions and greater competitive advantages. The ability to track and manage supply chain activities effectively, position companies to outperform competitors in terms of cost effectiveness and service quality.

Consequently, it we conclude that SCV enhance competitive advantage of firms by contributing to better performance management, effective resource utilization, and a stronger market position; and recommends that firms, especially those operating in dynamic and competitive markets should invest in advanced technologies and infrastructure that enhance SCV capabilities. This includes adopting IoT, blockchain, and other digital tools that facilitate real-time tracking and data management. Investing in these technologies can help overcome barriers to effective SCV implementation and support better decision-making.

It is also recommended that an empirical examination of SCV and competitive advantage be conducted in Nigeria's oil and gas sector to provide localized insights into the effectiveness of SCV, and to identify specific barriers and opportunities relevant to the Nigerian market

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